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1 111. The method of producing an amplified broadband optical signal
2 having a wavelength between 1530 to 1620 nm according to claim 95, wherein
3 said rare earth doped amplifier is an erbium-doped fiber amplifier.

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1 112. The method of claim 110, wherein the Raman amplifier amplifies and
2 spectrally broadens the first beam and the rare earth doped amplifier amplifies and
3 spectrally broadens the second beam.

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1 113. The method of claim 110, wherein the optical signal has a wavelength
2 between 1430 and 1620 nm.

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1 114. A broadband amplifier, comprising:
2 at least one input fiber;
3 a splitter coupled to the input fiber, the splitter splitting an optical signal
4 into at least a first wavelength and a second wavelength;
5 one or more Raman amplifiers coupled to the splitter;
6 one or more rare-earth doped optical amplifiers coupled to the splitter;
7 a combiner coupled to the Raman amplifier and the rare-earth doped optical
8 amplifier, the combiner combining an optical signal into at least a first wavelength
9 and a second wavelength; and
10 an output fiber coupled to the combiner.

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1 115. The amplifier of claim 114, wherein the splitter directs the first
2 wavelength to the Raman amplifier and the second wavelength to the rare-earth
3 doped optical amplifier.

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1 116. A broadband amplifier, comprising:
2 at least one input fiber;
3 a splitter coupled to the input fiber, the splitter splitting an optical signal
4 into at least a first wavelength and a second wavelength;
5 a first amplifier coupled to the splitter;
6 a second amplifier coupled to the splitter, wherein a zero dispersion
7 wavelength of the first amplifier is longer than a zero dispersion wavelength of the
8 second amplifier;
9 a combiner coupled to the first amplifier and the second amplifier, the
10 combiner combining an optical signal into at least a first wavelength and a second
11 wavelength; and

12 an output fiber coupled to the combiner.

102 117. A broadband amplifier, comprising:

1 at least one input fiber;
2 a splitter coupled to the input fiber, the splitter splitting an optical signal
3 into at least a first wavelength and a second wavelength;
4 a first amplifier coupled to the splitter;
5 a second amplifier coupled to the splitter, wherein a pump wavelength of the
6 first amplifier is larger than a pump wavelength of the second amplifier;
7 a combiner coupled to the first amplifier and the second amplifier, the
8 combiner combining an optical signal into at least a first wavelength and a second
9 wavelength; and
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11 an output fiber coupled to the combiner.

103 118. A broadband amplifier, comprising:

1 at least one input fiber
2 a splitter coupled to the input fiber, the splitter splitting an optical signal
3 into at least a first wavelength and a second wavelength;
4 a distributed gain medium coupled to the splitter, the distributed gain
5 medium providing gain through a third order non-linearity;
6 one or more rare-earth doped optical amplifiers coupled to the splitter;
7 a combiner coupled to the distributed gain medium and the rare-earth
8 doped optical amplifier, the combiner combining an optical signal into at least a
9 first wavelength and a second wavelength; and
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11 an output fiber coupled to the combiner.

104 119. The amplifier of claim 118, wherein the splitter directs the first
2 wavelength to the distributed gain medium and the second wavelength to the rare-
3 earth doped optical amplifier.